ID No.
CH 15685
– RETURN TO –
INSTRUMENT CONTROL
SYLVANIA SES -- West

2ND MANUAL

KS KRUSE STORKE

INSTRUCTION MANUAL

INSTRUMENT SHOP

MODEL 4041M1

SWEEPING CURRENT SUPPLY

Serial No. 24

INSTRUMENT SHOP

NOTE;

This unit has modification M1 – modified with 0.01% resolution, 10 turn coarse bias control and 10 turn fine control with 2% range.

8/3/67

KRUSE-STORKE ELECTRONICS
790 HEMMETER LANE • MOUNTAIN VIEW, CALIFORNIA 94040, U.S.A. • (415) 967-2299

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MODEL 4041

ID No. CH1C85
- RETURN TO -
INSTRUMENT CONTROL
SYLVANIA SES -- West

2ND MANUAL

SWEEPING CURRENT SUPPLY

SPECIFICATIONS

CURRENT, DC or DC PLUS SWEEP
Zero to 3 A. DC set by full range panel 10-turn control and .1% range single turn Fine control.

POLARITY
Normal or reverse selected by panel switch.

CURRENT STABILITY
±.02%/hr, of maximum current in invariant environment.

CURRENT REGULATION
±.01% of maximum current for:

a. 10% line change.
b. 10° C ambient temperature change.
c. 20% load change.

CURRENT RIPPLE
.005% of maximum current, peak to peak.

VOLTAGE, $L\frac{dI}{dt} + IR$

0 to 30 V DC or during sweep.
0 to 150 V during flyback.

LOAD
50 Mh +5 ohms, typical. Panel binding post connectors.

SWEEP MODES
External, Off, Internal Triggered or Recurrent

EXTERNAL SWEEP
External signal adds to set DC current. Response time, 50 microseconds, maximum. Positive going increases current. 10 V changes current 3 A.
Input impedance, 10 K. Panel BNC connector.

MANUAL TRIGGER
Sweep started by panel push-switch.

EXTERNAL TRIGGER
Direct coupled, pulse +2 Volts minimum, 1 microsecond or longer starts sweep.
Input impedance 10 K. Panel BNC connector.

LINE TRIGGER
Sweep triggered at line or submultiple frequency.

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SWEEP AMPLITUDE
Adjustable by panel 10-turn control.
Wide, 0 to 3 A.
Narrow, 0 to ± .15 A (5% of wide range), varies symmetrically about DC value.

SWEEP OUTPUT
Positive sawtooth sweeps 0 to + 10 V, fixed amplitude on internal sweep. Output impedance less than 100 ohms. Load current 10 ma maximum. Panel BNC connector. Sweep output connected directly to External Sweep input on External sweep mode.

SWEEP LINEARITY
± .05% of sweep peak to peak value.

SWEEP TIME
.01 to 100 seconds, Decade switch with 10:1 vernier.

FLYBACK TIME
10% of cycle, or less.

BLANKING
+ 18V pulse during flyback, -.5V during sweep.
1K output impedance, panel BNC connector.

METERING:
0 to 3 A, 3-1/4" meter, 2% accuracy.

PROTECTION
Load flyback voltage limited to +150 V.
Load may be open or short circuit without damage.

ENVIRONMENT
+ 5° to + 45° C, operating.

POWER INPUT
115 V or 230 V, ± 10%, 50 to 60 Hz, 200 VA maximum.
Voltage selected on internal terminals.

PHYSICAL
Bench mounting: Handle sides may be removed for rack mounting.

Height: 5-1/4"
Width: 19"
Depth: 14" behind panel, 16" overall.

WEIGHT
22 pounds.

SWEEPING POWER SUPPLY
CHECK OUT

MODEL # 4041

SERIAL # 24

± 20 Volt Supply

+ 19.98 (19.9 - 20.1)

Ripple < .2 (<2) mv pk to pk, sweep off

Ripple < .2 (<2) mv pk to pk, sweep on

$E_{AC\ min}$ < 90 (<103) volts

- 19.99 (19.9 - 20.1)

Ripple < .2 (<2) mv pk to pk, sweep off

Ripple < .2 (<2) mv pk to pk, sweep on

$E_{AC\ min}$ < 90 (<103) volts

DC Magnet Current (Use 1 ohm)

I_{min} ± 0 (<1) ma, Set Zero R-31

Fine @ 0
Coarse @ 0

ΔI_{Fine} 61 (55-65) ma

Fine 0 to max
Coarse @ 0

I_{max} 3.01 (>3) A

Fine @ max.
Coarse @ max.

Ripple < .1 (<.3) mv pk to pk @ 115 V, .1 A

Ripple < .1 (<.3) mv pk to pk @ 115 V, 3 A

Stability 1.0 (<1.2) mv pk to pk, 1 hour drift at constant ambient at 1 A

Polarity Switch OK ✓

Regulation

Line change 103 - 115 V I < .1 (< .3) ma @ 2 A

115 - 127 I < .1 (< .3) ma @ 2 A

Model 415-A
S/N 24

Load change - shunt with 15 ohms, I <.1 ma (<.3)

$\Delta T = 10^{o}C$, .2 ma (<.3)

Sweep Connect 10 ohm 50 mh magnet.

Sweep out 9.98 v max. (9.9-10.1) Recur zero −10 mV (± 20)

Blanking out 18 v (>18) Trigger zero +15 mV (± 20)

Current sweep, wide 3.01 A (>3 A)

± 5% - 155 ma (143-157) + 154 ma (143-157) @ 1 A center

$E_{input\ min.}$ <99 (<103) I_{dc} = 0 A
3 A sweep, recurrent T = .01 sec.
(Observe current across shunt)

Trigger Manual OK ✓ Line OK ✓
+2 v trigger

Panel Connectors EXT TRIG OK ✓ EXT Sweep ✓
Sweep Output ✓ Blanking Out ✓

Sweep Time - Total Period Adjust R-35 for correct flyback time.

	1	Flyback	10	Flyback
.01	9.5 ms (8-12)	1 ms (.8-1.2)	100 ms (80-120)	1 ms (.8-1.2)
.1	90 ms (80-120)	10 ms (8-12)	1100 ms (800-1200)	10 ms (8-12)
1.	.9 sec. (.8-1.2)	100 ms (80-120)	10.5 sec. (8-12)	1.0 ms (80-120)
10	9 sec. (8-12)	1.0 sec. (.8-1.2)	100 sec. (80-120)	1.0 sec. (.8-1.2)

Over-voltage limit 190 volts, collector-emitter Q_2, Q_3. (190 - 200)

Shorten flyback for this measurement by shunting R48, 220K on Trigger and Sweep board with 220 K, and use 90 Mh magnet.

Model 4041
S/N 24

Response Time <50 (< 50) microseconds.

Sweep Linearity 2 (< 2.3) mv (Summing junction to ground).

Emitter drops across .5 ohms @ 3 A dc Q_2 .822 (.7 - .9) V Q_3 .766 (.7 - .9) V

Room Temp. 25 °C.

Sink Temp. @ 3 A dc @ 125 V in 70 °C.

Transistor Temp. @ 3 A dc @ 125 V in Q_2 85 °C Q_3 85 °C.

Rise Q_2 60 °C Q_3 60 °C.

$T_{transistor}$ @ 45°C = 45 + Rise Q_2 105 °C Q_3 105 °C.

$E_{collector}$ Q_2 30.0 Q_3 30.0.

$P_T = E_c \times I_c$ Q_2 50 watts Q_3 47 watts.

Rated P_T @ $T_{transistor}$ 100.

Fuse 2A OK ✓.

Serial No. Label installed OK ✓.

Card Cushion installed OK ✓.

Handle Sides installed OK ✓.

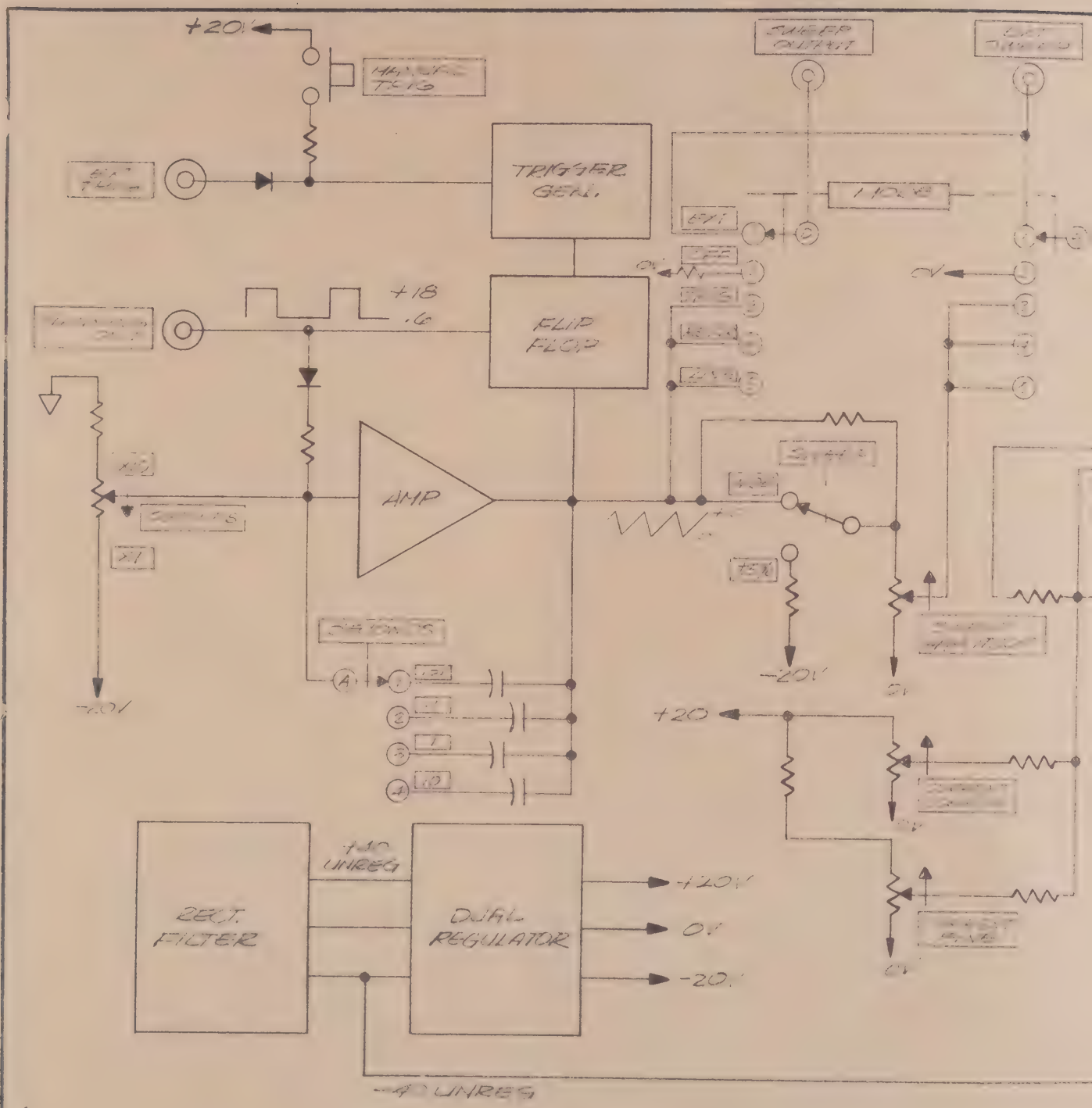
Top and bottom installed OK ✓.

Tested By MEM

Date 8-3-67

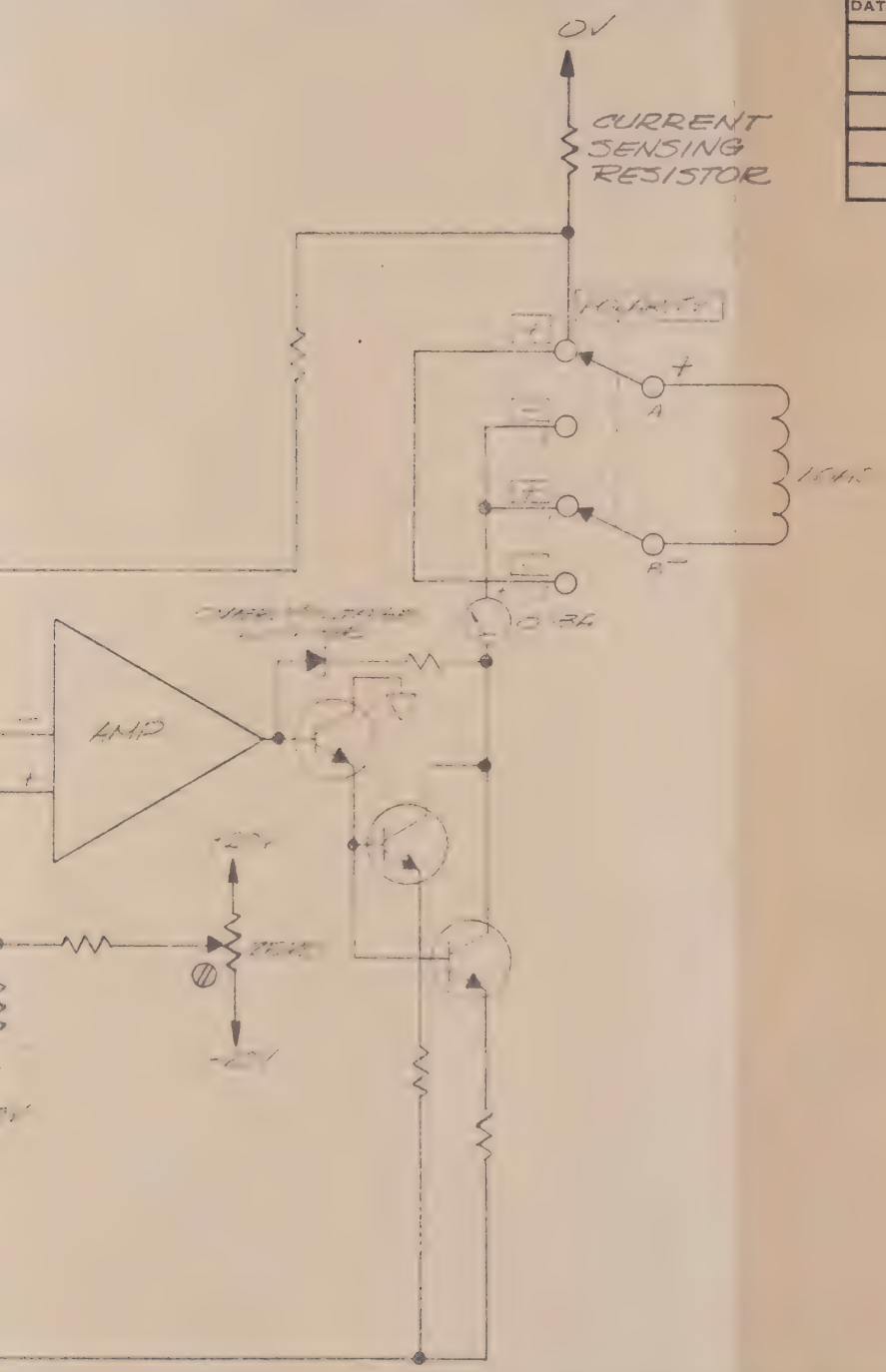
Approved By WEH

Date 8-5-67



K+E ALBANENE ® 10 5465
ENGINEERS' STANDARD FORM

DATE	SYM	REVISION RECORD	AUTH.	DR.	CK.



TOLERANCES (EXCEPT AS NOTED)	KRUSE-STORKE ELECTRONICS		
DECIMAL ±		SCALE	DRAWN BY VICTOR Y. HOU APPROVED BY 8/16/66
FRACTIONAL ±	TITLE SIMPLIFIED SCHEMATIC MODEL 4041 FIGURE NO. 1		
ANGULAR ±	DATE	DRAWING NUMBER S-900024	

MADE IN U. S. A.

CHG	DESCRIPTION	ECO	BY
A	DIS WAS IN3000B, 1N914, ±5%		DH
B	ADDED R36-1 PER ECO B00010		DH
C	ADDED R36-1 PER ECO B00010 S/N 118		DH
D	ADD R80 TO 348-1, 2, 4	019	DH
E	REVISED PER ECO B00010	010	DH
F	TRIG-SWEEP PCB WAS 934004, REMOVED Q28, Q29 WAS 2N1302, R5 WAS 10K, C25 WAS .01μF	028	DH
H	CHG. ANNIV. REV WAS 5 NOW H, ADDED C28	038	DH

NOTES:
1. UNLESS OTHERWISE SPECIFIED:
   1A. ALL RESISTORS IN OHMS, 1/4W, ± 2%, METAL FILM
   1B. ALL RESISTOR LABELED 5% OR 10% ARE VOLUMED COMPOSITION
   1C. ALL RESISTOR LABELED 1% ARE METAL FILM OR DEPOSIT CHROMIUM
   1D. ALL CAPACITOR IN MICROFARADS, 300V
   1E. ALL POTENTIOMETERS ARROW INDICATES CW ADJUSTMENT
   1F. ✻K ——— INDICATES VALUE SELECTED AT TEST

TRIGGER AND SWEEP ——— P.C. BD 934004

OPERATIONAL AMPLIFIER ——— P.C. BD 934005

DUAL PRECISION REGULATOR P.C. BOARD 934003

TIMING CAPACITOR (P.C. BD 934030)

KRUSE-STORKE ELECTRONICS MOUNTAIN VIEW, CALIFORNIA	
SCALE:	APPROVED BY: FWK 11/15/66 — DRAWN BY: KEEE X Trans — DATE: — REVISED
SCHEMATIC DIAGRAM, SWEEPING CURRENT SUPPLY	REV H
MODEL 4041-H1 S/N 24	DRAWING NUMBER D 900036

SHIPMENT DAMAGE

The instrument should be tested as soon as it is received. If it fails to operate properly or is damaged in any way, a claim must be filed with the carrier. Have carrier agent inspect damage to instrument and packing crate and forward us a copy of his written report. You will then be advised of replacement or repair arrangements and disposition of the equipment. Please include model number, and serial number when referring to this instrument for any reason.

WARRANTY

KRUSE-STORKE products are warranted against defects in workmanship and materials. This warranty is limited to repair or replacement of products or parts which prove defective in normal service within two years after delivery to original purchaser. KRUSE-STORKE is not liable for consequential damage.

If any fault develops:

1. Notify us, giving full details of the difficulty, including the model number, and serial number. Upon receipt of this information, you will be sent service instructions or shipping data.
2. Upon receipt of shipping instructions, forward the instrument prepaid and repairs will be made at the factory. If requested, an estimate of the charges will be made before the work begins when instrument is not covered by this warranty.

PACKING

The instrument should be packed in the original carton. If unusable or not available, use a heavy cardboard box with approximately three inches of excelsior or other shock-absorbing material surrounding the instrument. If desired, packing services of a local transfer and storage company may be employed.

KRUSE-STORKE ELECTRONICS

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MP MASTER
MA23050